CLASIC BAA FAQ

Question: What does “unique signal” mean and is the government going to provide signal test sets?

Answer: A “unique signal” is defined as a unique set/collection of characteristics such as carrier frequency, modulation type (e.g., AM, FM, 64QAM), symbol rate, access scheme (e.g., FDMA, TDMA), spreading (e.g., frequency hopping, direct sequence), etc. It is anticipated that the government designated “red team” will generate test signal mixtures at their own facility for the purposes of evaluating the performers’ CLASIC hardware deliverables with respect to the program goals. That being said, it is expected that each performer team would need to have the capability to appropriately test their CLASIC parts while they are under development. Proposers should describe their capabilities and test plans in their proposal.

Question: Over what interval of time is 0.5% of false alarm being specified?

Answer: The BAA specifies a *probability* of false classification as is typically specified on receiver operating characteristic curves, it is not a false alarm *rate*.

Question: After the beginning of a new transmission, how much time is allowed to pass before signal classification must be complete?

Answer: The energy goal reflects both the power consumption and the time required to complete the classification of each signal. However, extremely long processing times that may otherwise meet the energy goals may not be practical for realistic applications, and this would be viewed as a weakness in the proposal in terms of technology transition. It should also be noted that proposed approaches that can exceed the program goals are certainly of significant interest.

Question: Do you allow the use of multiple receive antennas?

Answer: The BAA does not specify or exclude any RF front-end architectures. However, if certain signal processing efficiencies are gained through a particular front-end architecture, then the energy cost of the front-end processing must be appropriately accounted for.
It should also be noted that the CLASIC hardware deliverables should be able to process signal mixtures anywhere in the chosen spectral field of regard.

Question: The BAA states that minimum number of unique signals is 25. What is the requirement for the minimum number of expected signals at the same frequency band at the same time? Can we assume that at any given time, only one of the 25 unknown waveforms is occupying any specific bandwidth?

Answer: Multiple overlapping/co-channel signals may exist in the spectral field of regard at a given time. For example, multiple CDMA signals may overlap each other in a given bandwidth.

Question: The BAA states that the power consumption of the RF front-end such as the frequency down-conversion does not count towards the BAA energy requirement. Where should one draw the line?

Answer: The BAA does not specify or exclude any RF front-end architectures. However, if certain signal processing efficiencies are gained through a particular front-end architecture, then the energy cost of the front-end processing must be appropriately accounted for.

Question: The BAA leaves the relative power strength of waveforms to the proposers. Is there a minimum Dynamic Range requirement for the receiver?

Answer: The dynamic range performance of a receiver will also be impacted by front-end components, filtering, etc. The goal here is to develop the signal processing capabilities described in the BAA, as opposed to the development of high-linearity RF front-ends. Consequently, the dynamic range limitations of a given proposed approach should be studied and reported by the performer. Approaches that are excessively constrained in this regard may not be selected to proceed beyond the design phase. Note that solutions that exceed the program goals are certainly of interest. Also, note that if certain signal processing efficiencies are gained through a particular front-end architecture, then the energy cost of the front-end processing must be appropriately accounted for.

Question: Can the ASIC be digital?

Answer: Any approach that can achieve the program goals stated in the BAA will be considered. If certain signal processing efficiencies are gained through a particular front-end architecture, then the energy cost of the front-end processing must be appropriately accounted for.

Question: Can university-only teams compete, for possibly smaller grants?

Answer: There is no restriction against university only teams proposing to this BAA. Proposals should address the program goals and technical areas as discussed in the BAA. DARPA may

elect to fund portions of a proposed effort in accordance with Part II, Section 2 (page 11) of the BAA.

Question: Would a system that dissipated "a little more" energy than shown in Figure 3 but also provided additional functionality be of interest to DARPA?

Answer: The intent of the program is to target the performance goals as stated in Part II, Section 1 of the BAA. You are welcome to add additional functionalities if you wish, but the signal separation and classification process is expected to meet the program goals.

Question: The BAA states in Table 2 on p. 10 the performance goals of CLASIC in 3 incremental bandwidths and frequency bands. Should a proposer select one of the 3 as the end-of-program performance goals, or ALL 3 need to be achieved by a single team? If the latter, could one naturally understand the 3 bands as Phase I, II, and III goals?

Answer: As stated in Part II, Section 1 of the BAA (page 10), proposers may choose to pursue one or more of the spectral fields of regard. The performance goals stated in Table 2 apply to all program phases as described on pages 9-10 under “CLASIC Program Structure”.

Question: Will the Government entertain proposals that define different work phases other than the 3 phases implied under Government’s BAA Part II, Section 1 “Program Structure” that would result in a later shift of the necessary funding profile?

Answer: The proposers should present a credible plan to meet the goals of the program and justify how their proposed work phases will result in successful IC design, implementation, and field demonstration with RF front end. It should be noted that a Critical Design Review is expected to be held that will determine if a particular effort is selected to proceed beyond the design phase.